

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A diagnostic method for detecting and identifying bacterial species causing infections from a clinical sample, said method comprising:

a) amplifying DNA isolated from said clinical sample using a mixture of DNA primers that comprises sequences which hybridize with the sequences that originate from conserved regions of *rpoB* genes encoding DNA directed RNA polymerase [EC:2.7.7.6] subunit B of bacterial species causing infections, said sequences comprising SEQ ID NOS: 20 and 21 and/or complementary sequences ~~thereof and/or functional fragments thereof~~,

b) contacting the amplified DNA with a desired combination of oligonucleotide probe sequences that hybridize under normal hybridization conditions with hyper-variable regions situated near said conserved regions of *rpoB* genes encoding DNA directed RNA polymerase [EC:2.7.7.6] subunit B of bacterial species causing said infections, said sequences being bacterial species specific under said hybridization conditions, and

c) detecting the formation of a possible hybridization complex.

2. (Currently Amended) The diagnostic method according to claim 1, wherein said ~~infections causing bacterial species~~ causing infections are bacterial species that cause human disease, ~~particularly respiratory tract infections and/or ear, nose and throat diseases.~~

3. (Previously Presented) The diagnostic method according to claim 1, wherein said hyper-variable region is the hyper-variable region of the gene encoding the *rpoB* protein of a bacterial species selected from *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Streptococcus pyogenes*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Legionella pneumophila*, *Corynebacterium diphtheriae*, *Mycoplasma pneumoniae*, *Escherichia coli*, *Moraxella catarrhalis* and *Neisseria gonorrhoeae*.

4. (Currently Amended) The diagnostic method according to claim 1, wherein the ~~length of oligonucleotide probe sequences used in step b) are 15 to 30~~ 15 to 30, more

~~preferably 19–30, and most preferably 19–26 nucleic acids~~ nucleotides long and are optionally labeled.

5. (Currently Amended) The diagnostic method according to claim 1, wherein said combination of oligonucleotide probe sequences comprises all or a portion of SEQ ID NOS: 1 to 19, and/or complementary sequences thereof, ~~or functional fragments thereof and preferably it comprises all of the SEQ ID NOS: 1 to 19.~~

6. (Currently Amended) The diagnostic method according to claim 5, wherein said combination of oligonucleotide probe sequences is attached onto a solid support, ~~preferably onto treated glass.~~

7. (Previously Presented) The diagnostic method according to claim 1, wherein the DNA isolated from the clinical sample in step a) is amplified using the polymerase chain reaction (PCR) and wherein the DNA amplified in step b) is contacted with the bacterial species-specific oligonucleotide probes attached onto a solid support.

8. (Previously Presented) The diagnostic method according to claim 7, wherein suitably labeled nucleotides are used in the amplification of DNA isolated from a clinical sample in step a) to generate a detectable target strand and wherein the amplified and optionally labeled target DNA in step b) is contacted with a solid support, on which all bacterial species-specific oligonucleotide probes of SEQ ID NOS: 1 to 19 and/or complementary sequences thereof have been attached.

9. (Currently Amended) The diagnostic method according to claim 8, wherein the amplified and optionally labeled target DNA in step b) is contacted with a solid support, ~~preferably treated glass,~~ on which specific oligonucleotide probe sequences detecting one specified bacterial species or a few specified bacterial species causing infections have been attached, said sequences being selected from sequences shown in Table 3 and/or complementary sequences thereof.

10. (Currently Amended) The diagnostic method according to claim 1, wherein ~~the~~ DNA microarray technology is used in step c).

11. (Withdrawn) A DNA primer mixture comprising sequences that hybridize with sequences of the conserved regions of *rpoB* genes encoding DNA directed RNA polymerase [EC:2.7.7.6] subunit B of bacterial species that cause infections, said mixture comprising SEQ ID NOS: 20 and 21 and/or complementary sequences thereof or functional fragments thereof.

12. (Withdrawn) An oligonucleotide sequence useful in the diagnosis of infection causing bacterial species, wherein said oligonucleotide sequence hybridizes under normal hybridization conditions with a sequence of a hyper-variable region that is bacterial species-specific and is situated near the conserved regions of *rpoB* genes encoding DNA directed RNA polymerase [EC:2.7.7.6] subunit B of bacterial species causing said infections, said oligonucleotide sequence being bacterial species-specific and said oligonucleotide sequence comprising one of the SEQ ID NOS: 1 to 19 or complementary sequences thereof or functional fragments thereof.

13. (Withdrawn) The combination of oligonucleotide probe sequences useful in the diagnosis of infection causing bacterial species comprising any combination of the SEQ ID NOS: 1 to 19 or complementary sequences thereof or functional fragments thereof.

14. (Withdrawn) The combination of oligonucleotide probes according to claim 13 comprising all of the SEQ ID NOS: 1 to 19.

15. (Currently Amended) The use diagnostic method according to claim 1, wherein detecting the formation of a hybridization complex in step c) correlates with ~~of the combination of oligonucleotide probes according to claim 14 for the detection, identification, or classification of disease causing bacterial species.~~

16. (Withdrawn) A diagnostic kit for use in the diagnosis of infection-causing bacteria, especially those causing respiratory tract infections, comprising

a) a DNA primer mixture comprising sequences that hybridize with sequences of the conserved regions of *rpoB* genes encoding DNA directed RNA polymerase [EC:2.7.7.6] subunit B of bacterial species causing infections, especially bacterial species that cause

respiratory tract infections, said mixture comprising SEQ ID NOS: 20 and 21 or complementary sequences thereof or functional fragments thereof,

b) a combination of bacterial species-specific oligonucleotide probe sequences, optionally attached on a solid support, comprising any combination of the SEQ ID NOS: 1 to 19 or complementary sequences thereof or functional fragments thereof,

c) positive and optionally negative control probe sequences, and optionally

d) reagents required in the amplification, hybridization, purification, washing, and/or detection steps.

17. (New) The diagnostic method according to claim 2, wherein said human disease is selected from the group consisting of respiratory tract infections, ear, nose and throat diseases, and combinations thereof.

18. (New) The diagnostic method according to claim 4, wherein the oligonucleotide probe sequences used in step b) are 19 to 30 nucleotides long.

19. (New) The diagnostic method according to claim 18, wherein the oligonucleotide probe sequences used in step b) are 19 to 26 nucleotides long.

20. (New) The diagnostic method according to claim 5, wherein the combination of oligonucleotide probe sequences comprises all of SEQ ID NOS: 1 to 19.

21. (New) The diagnostic method according to claim 6, wherein said solid support is treated glass.

22. (New) The diagnostic method according to claim 9, wherein said solid support is treated glass.

23. (New) The diagnostic method according to claim 10, wherein said DNA microarray technology comprises known nucleotide sequences attached in a predetermined order to a small substrate.